

AMENDMENTS TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A pattern reading apparatus, comprising:

a minute-area light source that causes an illumination light beam to be incident on an object surface having a pattern formed thereon as an object to be read;

an objective lens that converges a light beam carrying the information of the pattern;

a spatial filter having a shading region that shades a portion of the light beam that forms an image of said light source from the light beam, said spatial filter shielding a ~~specularly reflected~~ non-diffusing component of the light beam and ~~forming~~ permitting formation of an image by the ~~diffusely reflected~~ diffusing component of the light beam, said spatial filter being positioned such that a size of an image of said light source formed by said objective lens is smaller than a size of the image at a paraxial image point; and

an imaging lens that forms the image of the pattern using the portion of the light beam that passes through said spatial filter.

2. (Canceled)

3. (Currently Amended) A pattern reading apparatus according to claim [[16]] 1, wherein a distance L from said spatial filter to a surface of said objective lens nearest to said spatial filter satisfies the condition $0.06f_o < L < 0.95f_o$, where f_o represents the focal length of said objective lens.

4. (Currently Amended) The pattern reading apparatus according to claim [[16]]
1, wherein said spatial filter is positioned such that the size of the image of said light source formed by said objective lens is minimized.

5. (Currently Amended) The pattern reading apparatus according to claim 1, wherein said ~~object surface is a reflection surface~~, said light source is positioned such that the illumination light beam emitted from said light source reaches the object surface through said objective lens and the light beam ~~reflected at~~ from the object surface passes through said objective lens to be incident on said spatial filter.

6. (Original) The pattern reading apparatus according to claim 5, wherein said objective lens is positioned such that an optical axis of said objective lens is perpendicular to the object surface, and wherein said light source and said imaging lens are disposed on opposite sides of the optical axis.

7. (Original) The pattern reading apparatus according to claim 6, further comprising an imaging element positioned at the imaging position of the pattern for reading the image of the pattern.

8. (Original) The pattern reading apparatus according to claim 7, said objective lens being positioned such that a light beam from a point on the object surface is emitted from said objective lens as a non-parallel light beam, said imaging lens and said imaging element being movable along an optical axis of said imaging lens to change a magnification.

9. (Currently Amended) A pattern reading apparatus, comprising:

a minute-area light source that causes ~~an~~ a substantially parallel illumination light beam to be incident on an object surface having a pattern formed thereon as an object to be read;

an objective lens that converges a light beam having the information of the pattern;

a spatial filter having a shading region for shading the light beam to form the image of said light source which is contained in the light beam having passed through said objective lens, said spatial filter shielding a ~~specularly reflected~~ non-diffusing component of the light beam and ~~forming~~ permitting formation of an image by the ~~diffusely reflected~~ diffusing component of the light beam; and

an imaging lens that forms the image of the pattern from the portion of the light beam having passed through said spatial filter.

10. (Canceled)

11. (Previously Presented) The pattern reading apparatus according to claim 17, wherein the distance L from said spatial filter to the surface of said objective lens nearest to said spatial filter satisfies the condition $0.06f_o < L < 0.95f_o$, where f_o represents the focal length of said objective lens.

12. (Currently Amended) The pattern reading apparatus according to claim 9, wherein ~~the object surface is a reflection surface and~~ said light source is positioned such that the illumination light beam emitted from said light source reaches the object surface through said objective lens and the light beam ~~reflected at~~ from the object surface passes through said objective lens and is incident on said spatial filter.

13. (Currently Amended) A pattern reading apparatus, comprising:

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a minute-area light source;

an objective lens that makes an illumination light beam from said minute-area light source incident, as a substantially parallel light beam, on an object surface having a pattern formed thereon as an object to be read and converges a light beam reflected at the object surface;

a spatial filter, said spatial filter shielding a specularly reflected component of the light beam and ~~forming~~ permitting formation of an image by the diffusely reflected component of the light beam;

an imaging lens that forms, at an imaging position, an image of the pattern from the component of the light beam having passed through said spatial filter; and

an imaging element disposed at the imaging position of the pattern image that reads the pattern.

Claims 14 and 15. (Canceled)

16. (Currently Amended) The pattern reading apparatus according to claim [[1]] 9, said spatial filter being positioned such that a size of an image of said light source formed by said objective lens is smaller than a size of the image at a paraxial image point.

17. (Previously Presented) The pattern reading apparatus according to claim 9, said spatial filter being disposed nearer to said objective lens than a paraxial image point of the image of said light source.

18. (Previously Presented) The pattern reading apparatus according to claim 13, said spatial filter being disposed nearer to said objective lens than a paraxial image point of said light source formed through said objective lens, the spatial filter passing a

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diffused reflected component of the light beam which is contained in the reflected light beam having passed through the objective lens.

19. (Currently Amended) A pattern reading apparatus, comprising:

a minute-area light source that causes ~~an~~ a substantially parallel illumination light beam to be incident on an object surface having a pattern formed thereon as an object to be read;

an objective lens that converges a light beam carrying the information of the pattern; and

a spatial filter having a shading region that shades a portion of the light beam that forms an image of the light source which is contained in the light beam, said spatial filter being configured so that at least a central portion of the light beam is blocked by the spatial filter.

20. (Currently Amended) The pattern reading apparatus according to claim 19, said spatial filter shielding a specularly reflected component of the light beam and ~~forming~~ permitting formation of an image by the diffused component of the light beam reflected from the pattern.

21. (Previously Presented) The pattern reading apparatus according to claim 19, said spatial filter being disposed nearer to said objective lens than a paraxial image point of the image of said light source.

22. (New) The pattern reading apparatus according to claim 1, wherein the illumination beam, incident onto the object surface, is a substantially parallel light beam.

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23. (New) The pattern reading apparatus according to claim 9, said imaging lens and said imaging element being movable along an optical axis of said imaging lens to change a magnification.

24. (New) The pattern reading apparatus according to claim 13, said imaging lens and said imaging element being movable along an optical axis of said imaging lens to change a magnification.